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# Integration and Test (I&T)

## Sharon Komenda

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# SDPS Segment I&T Goals

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**Be an integral part of SDPS segment development process**

- support requirements definition
- develop tests based on level 4 requirements and segment design
- accept software components for integration

**Integrate, on an iterative basis, SDPS components**

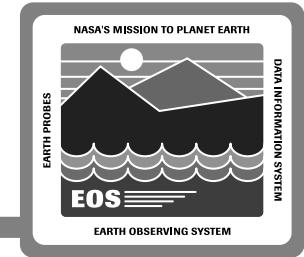
**Thoroughly test the integrated components and report discrepancies**

**Record test execution and perform regression testing if necessary**

**Document the test results**

- includes all test scripts, data inputs, data outputs, and analysis

# Segment I&T's Relationship to the Development Process



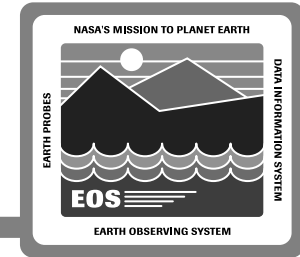
**I&T is an integral part of the development process:**

**System design/requirements by release**  
**Preliminary design/level 4 requirements**  
**Component decomposition**  
**Design traceability**  
**Detail design**

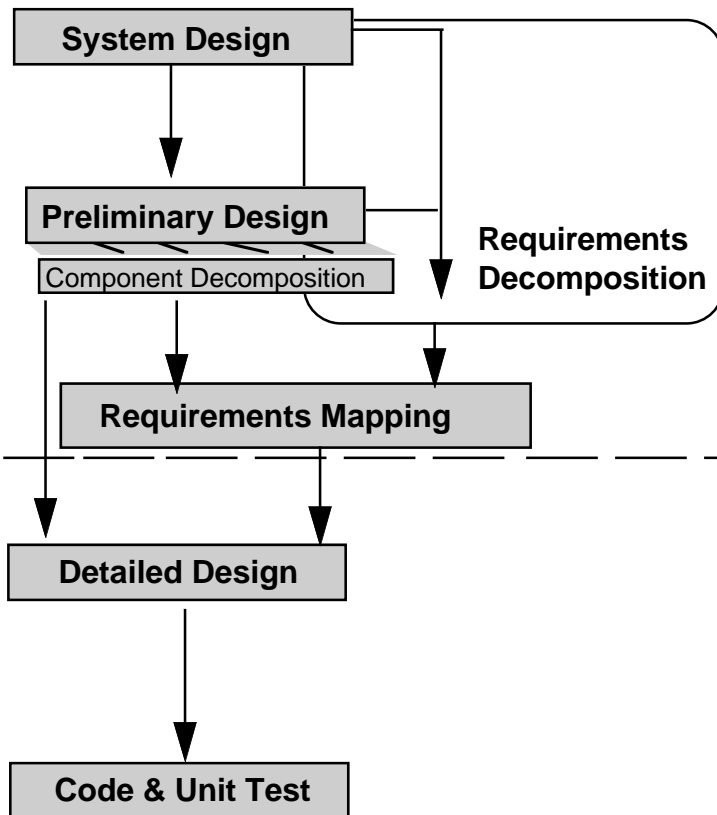
**Code & Unit Test**

**Segment thread/build**  
**Test case definition**  
**Components to test cases**  
**Requirements to test cases**  
**Test procedures/test bed configuration/test data/test drivers**  
**Thread/build integration & testing**  
**Turnover to systems test**

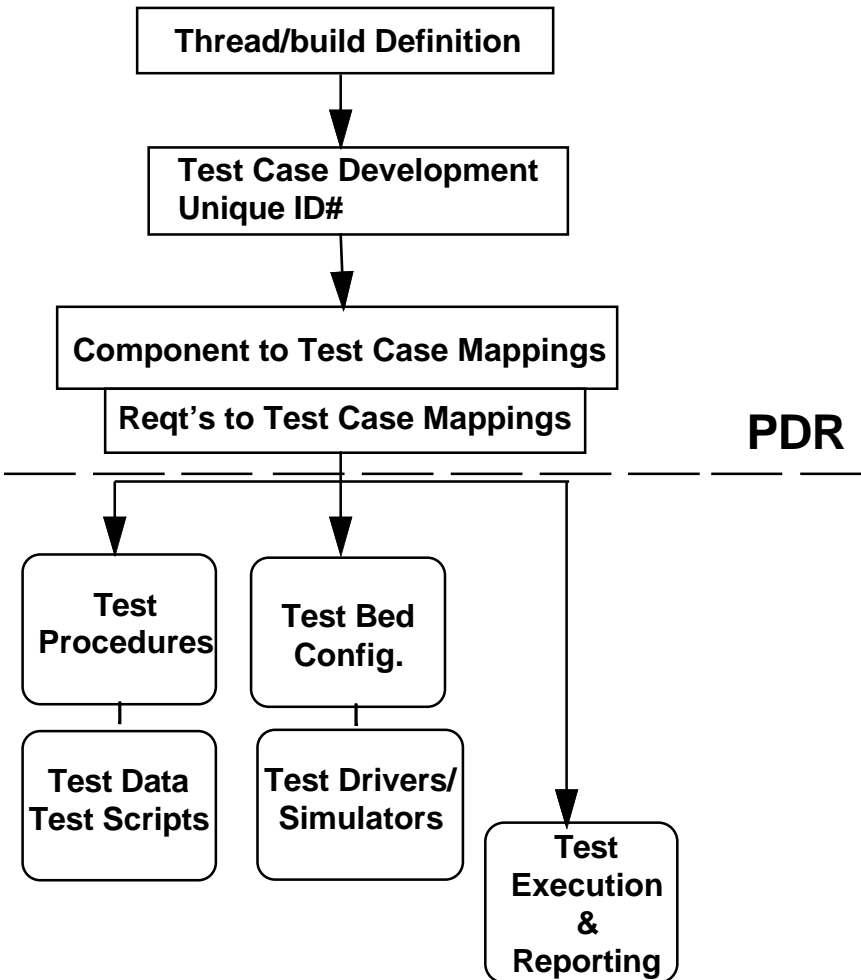
# Segment I&T and Development Planning



## Segment Design and Development



## SDPS Segment I&T



**PDR**

# I&T Test Plan Overview

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**Separate volumes for IR-1 and Release A:**

**Section 1 - Scope, Purpose, Organization**

**Section 2 - Related documents**

**Section 3 - Test process, build thread plan, thread/build diagram, schedules**

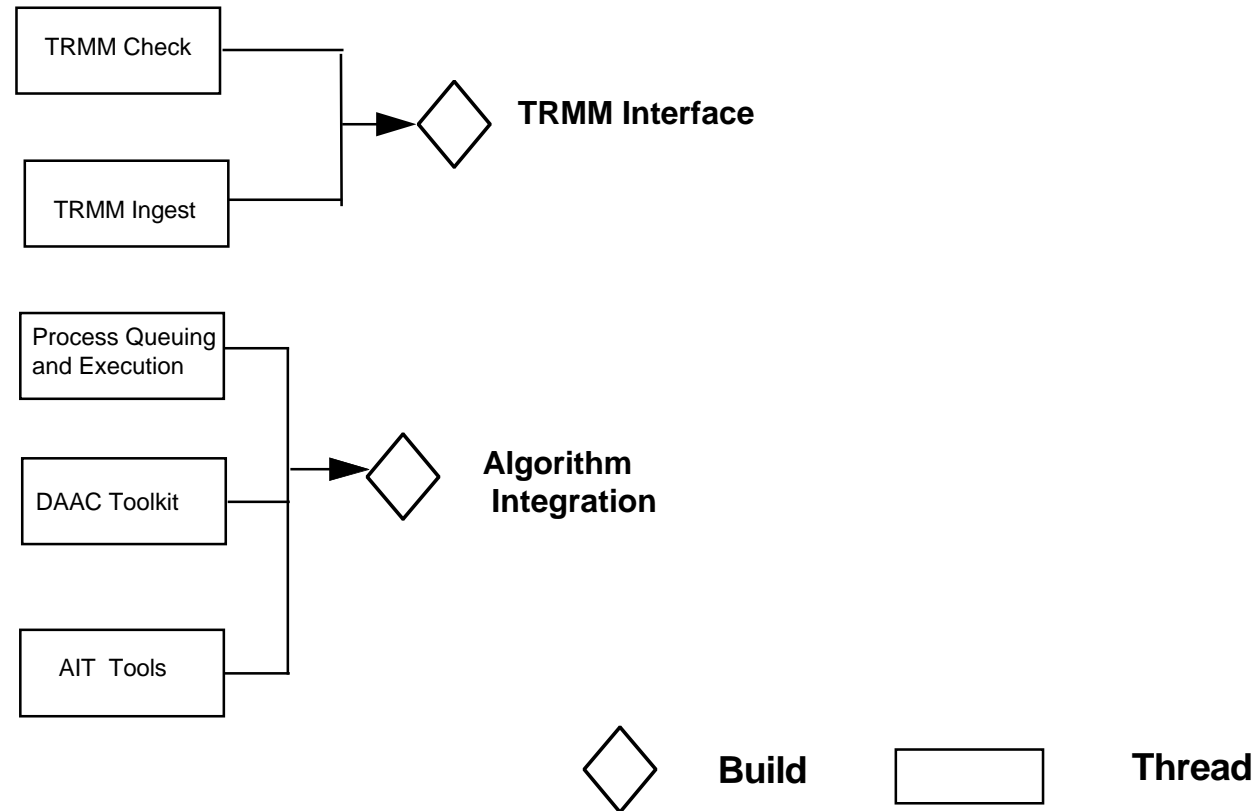
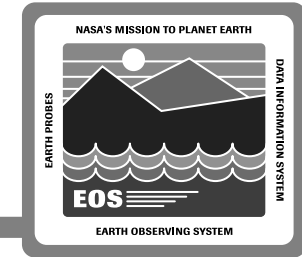
**Section 4 - Thread/build descriptions and test cases, builds/threads and test cases are uniquely identified for requirements traceability (RTM)**

**Appendix A - Test Tool Requirements**

**Appendix B - Level 4 requirements by test case (RTM)**

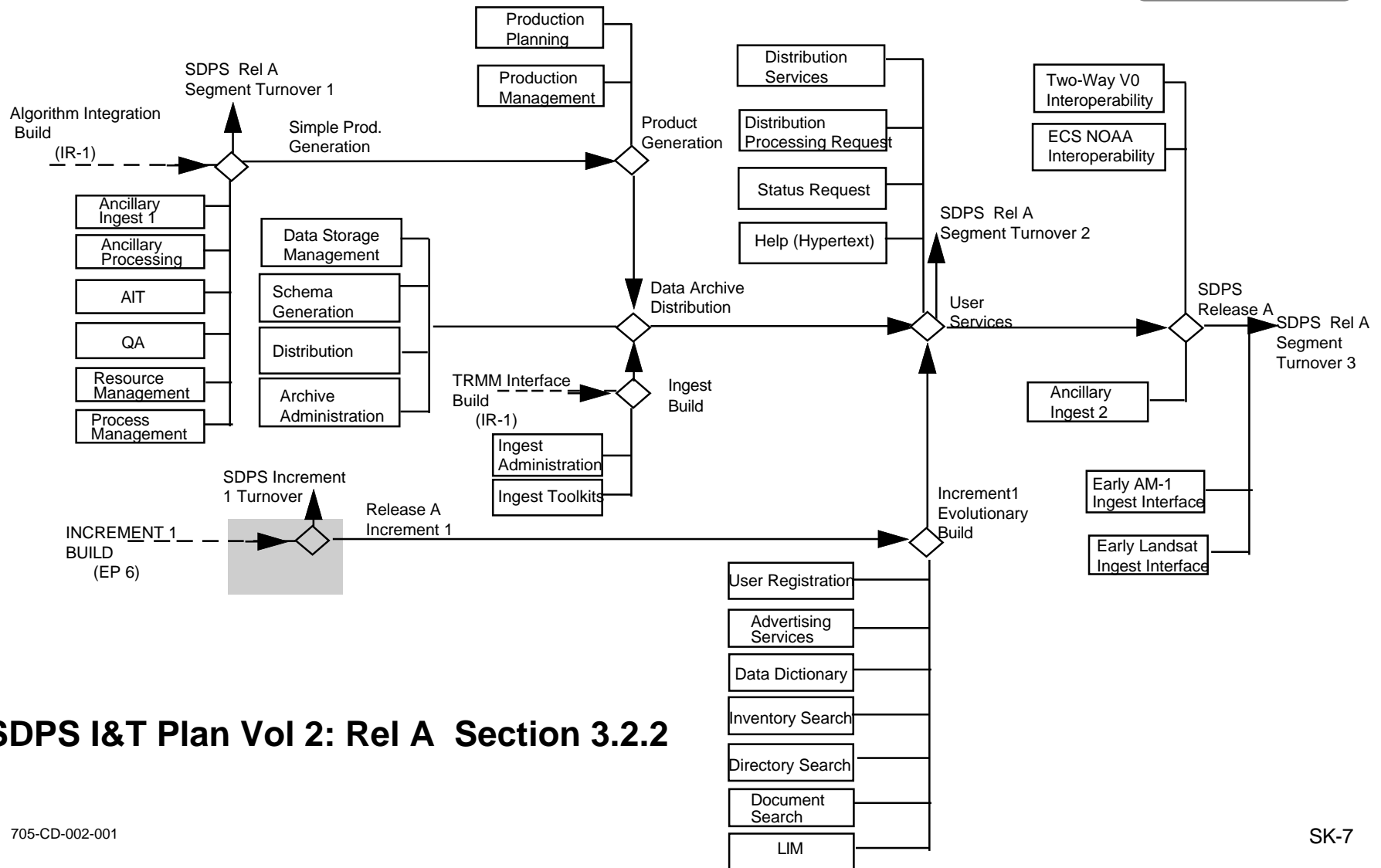
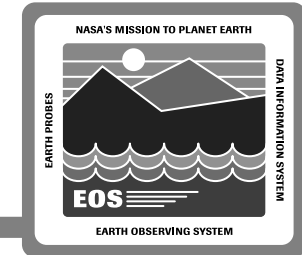
**Appendix C - Acronym List**

# IR-1 Thread/Build Diagram



SDPS I&T Plan Volume 1: IR-1 Section 3.2.2

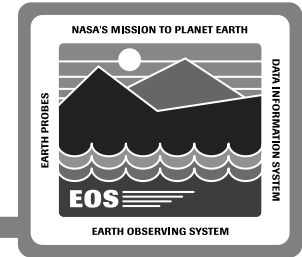
# Release A Thread/Build Diagram



## SDPS I&T Plan Vol 2: Rel A Section 3.2.2

# Thread/Build Test Content Example

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## Thread

- Thread description

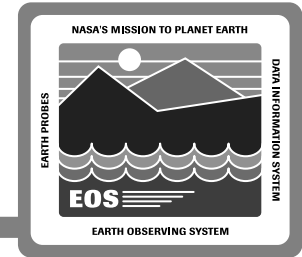
## Test cases

- Test description
- Test configuration - (hardware, software, data)
- Test support required
- Test inputs
- Test outputs
- Success criteria



# Thread Test Example

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## **Production Planning Thread Test(TS012)**

**Thread Description: Verify the ability of the operations staff to generate, modify, and activate a production plan.**

**Test Case 1: Candidate Plan Generation for Standard Production Request (TS012.001)**

**Test Case 2: Data Availability Schedule Generation (TS012.002)**

**Test Case 3: Entry of Production Plan Activation Request (TS012.003)**

**Test Case 4: Planning Database Management (TS012.004)**

**Test Case 5: Plan Modification with New Version (TS012.005)**

**SDPS I&T Plan Volume 2: Release A Section 4.2.1**

# Test Case Example (1 of 2)



## 4.2.1.1 Test Case 1: Candidate Plan Generation For Standard Production Request Test (TS012.001)

### Test Case Description

This test verifies the capability to create a candidate plan based on a Standard Production Request, a default strategy, and DASs. Production plan generation is also based on the predicted resource availability information received from site resource scheduling CSMS. A Production Request is entered through the HMI identifying the PGEs to be used for product generation. Once the plan is created, an electronic copy of the plan and its corresponding metadata is sent to a log file. A copy of the database environment is maintained.

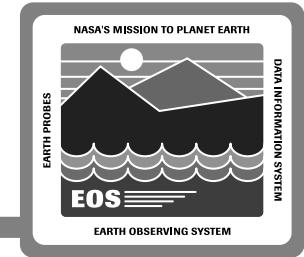
### Test Configuration

Hardware - Planning host, Planning Server

Software - Planning CI

Data - simulated TRMM data

# Test Case Example (2 of 2)



## Test Support Required

Existing standard processing requests, product generation executable (PGE) information, data availability schedules (DASs) and production rules in the Planning database. Simulated PGE. Simulated DAS and CSMS messages.

## Test Inputs

A Plan Creation Request is manually entered through the HMI.

## Expected Test Outputs

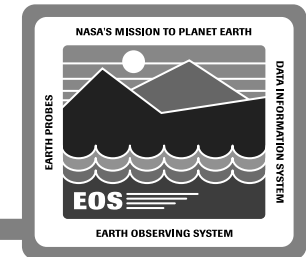
Response is displayed to terminal screen. A candidate plan is created.

## Success Criteria

A response is displayed to the terminal screen indicating the successful status of the created candidate plan. The candidate plan is examined and must contain appropriate: PGE identifiers, input data identifiers, calibration coefficients, input data sizes, PGE execution order precedence, individual PGE activity.

SDPS I&T Plan Volume 2: Release A Section 4.2.1.1

# Verification Matrix Example



Build/Thread Case ID	Test Case Name	Requirement #
TS012.001	Candidate Plan Generation For Standard Production Request	S-PLS-00670
TS012.001	Candidate Plan Generation For Standard Production Request	S-PLS-00690
TS012.001	Candidate Plan Generation For Standard Production Request	S-PLS-00710
TS012.001	Candidate Plan Generation For Standard Production Request	S-PLS-00760
TS012.001	Candidate Plan Generation For Standard Production Request	S-PLS-00500
TS012.001	Candidate Plan Generation For Standard Production Request	S-PLS-01200

## SDPS I&T Plan Volume 2: Release A Appendix B